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## PATENT COOPERATION TREATY

TRANSLATION

PCT

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

664490

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/008925

International filing date (day/month/year)

18.06.2004

Priority date (day/month/year)

23.06.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

ORIENT CHEMICAL INDUSTRIES, LTD.

1. This opinion contains indications relating to the following items:



Box No. I

Basis of the opinion



Box No. II

Priority



Box No. III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



Box No. IV

Lack of unity of invention



Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement



Box No. VI

Certain documents cited



Box No. VII

Certain defects in the international application



Box No. VIII

Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/008925

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language  
\_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/JP2004/008925

**Box No. V** Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

**1. Statement**

Novelty (N)	Claims 1-25	YES
	Claims	NO
Inventive step (IS)	Claims 1-25	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-25	YES
	Claims	NO

**2. Citations and explanations:**

Document 1: US 6100367 A (Dow Corning Toray Silicone Co., Ltd.), 8 August 2000

Claims 1-7, 10, 14-20, 24, and 25

The inventions described in claims 1-7, 10, 14-20, 24, and 25 appear to involve an inventive step over document 1 cited in the ISR.

Document 1 does not describe polyester or polycarbonate having in a main chain a specific unit with a reactive silicon-containing group. However, because of this feature, the invention of the present invention has many reactive silicon-containing groups contained in each molecule, and also has the advantageous effect of providing an organic/inorganic hybrid with a high density of cross-linking in which covalently bonded microscopic metal oxides are mutually micro-dispersed.

Claims 8, 9, and 21-23

The inventions described in claims 8, 9, and 21-23 appear to involve an inventive step over document 1 cited in the ISR.

Document 1 does not describe inserting an oxirane compound having a reactive silicon-containing group in the ester bond of polyester or polycarbonate to cause a reaction. However, because of this feature, the invention of the present invention has the advantageous effect where polyester and polycarbonate can be manufactured having many reactive silicon-containing groups contained in each molecule and providing an organic/inorganic hybrid with a high density of cross-linking in which covalently bonded microscopic metal oxides are mutually micro-dispersed.

Claims 11 and 12

The inventions described in claims 11 and 12 appear to involve an inventive step over document 1 cited in the ISR.

Document 1 does not describe manufacturing an organic/inorganic hybrid polymeric material by hydrolyzing and polycondensing polyester or polycarbonate having in a main chain a specific unit with a reactive silicon-containing group. However, because of this feature, the invention of the present invention has the advantageous effect where an organic/inorganic hybrid polymeric material can be manufactured with a high density of cross-linking in which covalently bonded microscopic metal oxides are mutually micro-dispersed.

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

Claim 13

The invention of claim 13 appears to involve an inventive step over document 1 cited in the ISR.

Document 1 does not describe an organic/inorganic hybrid polymeric material manufactured by hydrolyzing and polycondensing polyester or polycarbonate having in a main chain a specific unit with a reactive silicon-containing group. However, because of this feature, the invention of the present invention has the advantageous effect of having a high degree of cross-linking in which covalently bonded microscopic metal oxides are mutually micro-dispersed.